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fluorescent bacteria could be made indicative of that fact and yet avoid the trinomial term. What faults may be found in the book, however, are of minor importance in comparison with its value as a reference book, and a supplement to the text-book of every student in a bacteriological laboratory.—MARY HEFFERAN.

The flora of Alabama.⁴

DR. CHARLES MOHR has left behind him a most substantial monument. The bulky volume before us contains the botanical records of "forty years of sojourn and wanderings" through the state of Alabama. It may be added that the "wanderings" were by no means aimless, but were those of a keen and tireless observer. Such a mass of observations by a single man is the possession of no other state. It is a pleasure to note that the author was permitted to complete the organization of his notes of a lifetime into permanent and usable form.

The book presents the patient study of a great and interesting area, not by the perfunctory cataloguing of species collected, but by the discussion of the broad biological features which have determined the flora and its distribution. The author evidently fully appreciated the newer aspects of the problems of floras, and has presented to us, in terms of Merriam's life zones and Warming's plant associations, the general ecologic and floristic features of Alabama.

The general discussion occupies 137 pages, and is full of material for the student of phytogeography. After some preliminary historical material, in which the work of such pioneers as Bartram, Buckley, Gates, Peters, Beaumont, and Nevius, are fully noted, the general physiographic features of the state are presented under topography and geology, river systems, and climate. Then follows an account of the general principles of plant distribution, the significance of life zones and of plant associations and formations being explained. These principles are then applied to the flora of Alabama, which is presented in its general character and distribution.

The ecologic relations are considered under the following titles: forest flora, open land or campestrian flora, water and swamp flora, organotopic flora (epiphytic, saprophytic, parasitic, and insectivorous plants), and introduced plants and their influence upon native plant associations. The distribution falls naturally under the two general heads of the Carolinian and Louisianian areas; the former including the mountain region, the table-lands of the Warrior and Coosa basins, the region of the Tennessee river valley, and the region of the lower hill country; the latter including the region of

⁴MOHR, CHARLES: Plant life of Alabama. An account of the distribution, modes of association, and adaptations of the flora of Alabama, together with a systematic catalogue of the plants growing in the state. Contrib. U. S. Nat. Herb. 6: 1-921. pls. 1-13. 31 Jy. 1901.

the central pine belt, the central prairie region, and the maritime pine region.

The systematic catalogue occupies 682 pages, and is a model of painstaking care in the way of bibliography, synonymy, and range. The thallophytes number 1722, and notably full is the list of fungi by F. S. Earle, and the list of lichens. The bryophytes number 166, the pteridophytes 109, the gymnosperms 13, the monocotyledons 681, and the dicotyledons 1782. The total enumeration of species and varieties is 4473. About ten new species are described, but very many described elsewhere are founded on Dr. Mohr's material. The three endemic species are *Trichomanes Petersii*, *Croton Alabamensis*, and *Neviusia Alabamensis*. The sequence is that of Engler and Prantl, and the nomenclature is that of the Rochester code.

It is a matter of great regret that the author was not spared long enough to receive the congratulations of his associates upon the appearance of his monumental work.—J. M. C.

Methods in plant histology.⁵

AS STATED in the preface, this work has grown out of a course in histological technique given by the author to his classes in the University of Chicago and to its non-resident students taking work in this subject through the Extension Division. A series of articles on the same subject published by the author in the *Journal of Applied Microscopy* forms the basis of the present volume.

The first part of the book, about one-third, is devoted to the discussion of apparatus, reagents, and most of the important methods of killing and fixing, staining, sectioning, and mounting plant tissues and the lower forms of plant life. The chapter on apparatus is short, and much could be introduced that would enable the student who has not a complete laboratory equipment before him to save time and material and also produce more perfect results. The chapter on reagents seems unnecessary, as most of the matter is repeated elsewhere in the book. The description of the paraffin method is most complete and very carefully prepared, while the treatment of the celloidin method is hardly adequate, and does not give the more recent improvements that contribute so much to the successful use of this method in plant histology. The treatment of the methods of killing, fixing, and staining is admirable.

Part II is devoted to the study of types of the various groups of plants systematically arranged and illustrated by specimens easily collected by any one familiar with the main divisions of the plant kingdom. The directions for the treatment of the material used in these studies are excellent, and the

⁵CHAMBERLAIN, CHARLES J.: *Methods in plant histology*. 8vo. pp. vi+159. *figs.* 74. Chicago: The University of Chicago Press. 1901. \$1.50.